

SECRET/SECURITY INFORMATION

- 2 -

50X1-HUM

b [redacted] Koshtoyants was Deputy Director of the Institute of Evolutional Morphology imeni Severcey in Moscow, under the USSR Academy of Science, in 1940-1941. [redacted] he is now /1953/ Director of this Institute, although it may have a new name [redacted] In 1940, he was a Corresponding Member of the USSR Academy of Science, and Professor at Moscow University (cf. Comparative Physiology by Kh. S. Koshtoyants, Acad. of Science, Moscow-Leningrad, 1940*).

50X1-HUM

50X1-HUM

- c. Koshtoyants was interested mainly in the comparative nature of the transmission of nervous impulses in the nervous system, and from the nervous system to the muscles. He was also concerned with comparative aspects of cholinesterases, mostly in invertebrate animals, and the character of the inhibitory processes of cholinesterases activity. Four articles by Koshtoyants, for [redacted] are:

50X1-HUM

50X1-HUM

"About the Manner of Action of Acetylcholine Found by a Biological Test, and about Cholinesterases among the Invertebrates", Bulletin of Experimental Biology and Medicine, Vol 2, p 37, 1936.

"About the Study of Mechanisms of Action of Chemical Mediators in Invertebrates (Acetylcholine and Potassium)", Ibid, Vol 2, p 185, 1936.

(Popular Soviet Scientific Journal) Prirada (Priroda), Vol 5, p 77, 1936.

Third Meeting Devoted to Physiological Problems (several volumes on specific physiological problems), p5, no year. Published Leningrad.

[redacted] the last reviews of his published work are in the publications of the International Physiological Congress (Copenhagen, Denmark, 1950), and also possibly in some publication of the 19th International Physiological Congress (Montreal, Canada, August 1953) [redacted]

50X1-HUM

50X1-HUM

- d. His laboratory, in 1940-1941, consisted of some ten rooms, with good equipment. Although the usual visitors receptionist was present at the main entrance to the Academy of Science building, and visitors registered, Koshtoyants' laboratory reflected no additional security precautions [redacted] No special permission to visit was required. There was no mention of military implications to the research in Koshtoyants' laboratory [redacted]

50X1-HUM

50X1-HUM

- e. Koshtoyants' collaborators were:

(fnu) [I S ?] Artemov and (fnu) Bekbulatov (cf. "About the Content of Acetylcholine-like Substances in Nerve Ganglia /centrums/", Bulletin of Experimental Biology and Medicine, Vol 5, pp 379-81, 1938).

[Artemov] and [R L] Mitropolitanskaja (cf. "About the Content of Acetylcholine-like Substances in Nerve Tissue, and Cholinesterases in Hemolymph Crustacea (Arthropods)", Ibid, Vol 5, pp 382-385, 1938).

50X1-HUM

SECRET/SECURITY INFORMATION

SECRET/SECURITY INFORMATION

50X1-HUM

- 3 -

f

Artemov was the man in charge of cholinesterases and acetylcholine work in Koshtoyants's laboratory.

50X1-HUM

he was planning to investigate the action of inhibitors upon cholinesterases.

g.

50X1-HUM

Artemov's wife was a physiologist working in Moscow at the Pedagogical Institute.

50X1-HUM

She worked on cholinesterases and acetylcholine research in E B Babaskii's laboratory, as well as at the Pedagogical Institute. She was a graduate of Moscow University with the equivalent of a US Master's Degree, but had no post-graduate training in 1941.

50X1-HUM

h. Mitropolitanskaja was interested in the comparative aspects of the transmission of nerve impulses in different animals.

50X1-HUM

i.

j.

Synthetic inhibitors were, of course, found only later during World War II by the Germans. Koshtoyants in Moscow and the Institute of Biology and Pathology in Kiev were working in the same general direction - principally from the evolutionary point of view.

(Note: The references in paragraph 3 above, except that in sub-paragraph (b), were taken from: "Review of Chemical Transmission of Nerve Impulses", by K V ~~Masakov~~ (Kiev), Advances of Modern Biology, Vol VI-1, p 79.)

4. E B Babaskii's Laboratory:

a. The laboratory of Evgenij Borisovich Babaskii was located in 1940 in the Tihomirovski Building, Bolshaja Firogouskaja 51-57. Moscow.

50X1-HUM

Until 1937, he worked in the All-Union Institute of Experimental Medicine, and also at the Moscow State Pedagogical Institute. he is now [1953] (together with K M Bykov or (fnu) Rosenkov) one of the leading official physiologists in the USSR. In 1937, something happened, and from 1937 to 1941 Babaskii was in effect demoted to Head of the Department of Physiology of the Moscow State Pedagogical Institute.

50X1-HUM

50X1-HUM

50X1-HUM

His textbook on physiology is very good, and before World War II was recommended for university medical students.

b. Babaskii was one of the first Soviet scientists to work on cholinesterases in the USSR. His laboratory collaborators in 1941 were:

B M Kislnk
I G Kovyrev
A A ~~Masakov~~
N A ~~Pastorova~~

50X1-HUM

SECRET/SECURITY INFORMATION

SECRET/SECURITY INFORMATION

50X1-HUM

- 4 -

A A Kirillova

P F Minney (cf. "About the Change of Activity of Cholinesterases in Nerve Tissue under Electrotone", First Session of Moscow Society of Physiologists, Biochemists, and Pharmacologists, pp.170-172, Medgiz (Publisher) Moscow, 1941.)

E A Kukushkina (research laboratory technician) (cf. with A D Arkhipova, "Change in Activity of Cholinesterases in the Ontogenesis of Mammals, Bulletin of Experimental Biology, Vol. II, pp 533-535, 1941.)

This group worked mostly on acetylcholine, rather than cholinesterases. Bab'skii was primarily a physiologist, with the capable scientist's tendency to pick a direction of research and follow it through. He liked experimental work

50X1-HUM

it seems less likely that this laboratory shifted to the military aspects of cholinesterases inhibition than some others. Kisluk and Markosjan, however, likely to transfer to military research. They were typical of the new generation of Soviet intelligentsia in their lesser scientific idealism, and were sensitive to the practical advantages to be gained by shifting or focusing one's research.

50X1-HUM

50X1-HUM

c. The principal aims of Bab'skii's group were to investigate:

- (1) Physiologically active substances formed in brains and nerve trunks under excitement, and to determine the functional role of such active substances;
- (2) Whether these substances which formed in nerve systems are circulated in blood, and whether if present they affect some organs (not directly innervated by nervous excitement) through the blood (ie whether they have functions as hormones);
- (3) What is the chemical nature of these substances, whether during nervous excitement only acetylcholine and sympatin (or maybe some other physiological substances) are formed?

(Note: This indication of aims is derived from personal memory and "Investigations of Physiologically Active Substances Formed during the Excitement of the Nervous System", Scientific Notes (Uchenye Zapiski), Dept of Physiology, Moscow State Pedagogical Institute, Moscow, 1938, entire volume is devoted to the work of Bab'skii's laboratory.)

d. Bab'skii's laboratory was more or less involved in cholinesterases determination. The equipment in this laboratory did not seem as good as that in some of the other comparable installations. no work planned on inhibitors for cholinesterases.

50X1-HUM

5. The Sanitary Institute at Kiev:

a. This institute conducted secret research, especially military research. their workers were paid very well, which was probably required by the reluctance of many scientists (particularly prominent scientists) to work at this secret institution. One person who did work at the Sanitary Institute at night was Bella Hajkina, who was conducting cholinesterases and acetylcholine research connected with some form of gas poisoning. She investigated the activity of cholinesterases and the content of acetylcholine in the lungs after this poisoning. (fnu) Herchenovich was her chief in this work on the action of poison in gases. There was a large staff at the Institute and, according to Hajkina, everything they needed in the way of equipment.

50X1-HUM

50X1-HUM

b.

In the daytime, she worked with S E Epelbaum in the Department of Muscle and Nervous System Biochemistry at the Institute of Biochemistry in Kiev. (At this time, A V Palladin was Head of this Department and Director of the Institute.) Epelbaum's group in the Department worked on the metabolism of carbohydrates and phosphate compounds in the brain. Hajkina later went to the Ural mountain region

50X1-HUM

SECRET/SECURITY INFORMATION

50X1-HUM

SECRET/SECURITY INFORMATION

- 5 -

in the USSR as a biochemist in the Biochemistry Department of some school of medicine.

6. D E Alpern's Laboratory:

- a. D E Alpern, the pathological physiologist [redacted] headed a group at the Ukrainian Institute of Experimental Medicine and the First (?) School of Medicine in Kharkov. He was principally a clinician, attempting to investigate the amount of acetylcholine in blood under the condition of various diseases, and also the activity of cholinesterases in blood and other tissues under these same conditions. [redacted] a woman [redacted]

50X1-HUM

50X1-HUM

[redacted] was working on this same problem between 1938 and 1942 in the Department of Experimental Pathology at the Institute of Biology and Pathology in Kiev.)

50X1-HUM

- b. References of scientific publications by Alpern [redacted]

50X1-HUM

Chemical Nature of Nervous Excitement in Human Beings, Ukrainian Institute of Experimental Medicine, Ministry of Health, 1939, 230 pp (with French language abstracts).*

This book formed the basis of his laboratory experiments:

Archives of Biological Sciences, Vol 48, p 160, 1937; Vol 51, p 65, 1938; Vol 51, P 60, 1938; and other references to Alpern's work on cholinesterases.

Physiological Journal of the SSR, Vol 24, p 25, 1938.

- c. [redacted] several scientists working in Alpern's laboratory:

50X1-HUM

E N Barger (cf. Archives of Biological Sciences, Vol 51, p 73, 1938). Worked on research relating to cholinesterases.

N N Anosov (cf. ibid, Vol 51, p 69, 1938). [redacted] also in Alpern's laboratory at one time.)

50X1-HUM

T F Fesenko

- d. From a logical point of view, the research problem under investigation in Alpern's laboratory in 1941 had at least an indirect military significance.

7. The work in the following establishments is much less well known [redacted]

50X1-HUM

8. First Medical Institute of Kiev:

In the Department of Physiology (Head of Department: (fnu) Voronov), [redacted] Serkov, a full professor second in command, was engaged in some form of cholinesterases and acetylcholine research.

9. Kiev University:

(fnu) Yachenko was head of the Department of Physiology and also [redacted] Director of the Institute of Physiology at the University. [redacted] In 1941, there was a woman [redacted] who was doing graduate work in acetylcholine and probably cholinesterases. This work was at the Master's Degree level.

50X1-HUM

50X1-HUM

10. Physiological Institute Imeni Pavlov, Leningrad:

Study of the effect of acetylcholine upon the mechanism of muscle contractions (effect of ironaxia, etc). There was a large group here, working in general in pure muscle physiology.

A G Ginetzinsky (cf. "Cholinergic Structure of the Muscle Fibre", Journal of Physiology, Vol 33-No 4, p 413, 1947; Vol 32, p 76, 1946.

SECRET/SECURITY INFORMATION

50X1-HUM

SECRET/SECURITY INFORMATION

- 6 -

N I Mikhelson (cf. Biological Issue, Izvestia Academi Nauk, No 1, p 13, 1943.

N M Shamarina (cf. "About the Cholinesterases Content in Embryo Heart", Physiological Journal SSR, Vol 28 - Issue 6, p 650, 1940; Biological Issue, Izvestia Academi Nauk, No 2, 1943; Trudy (Works) of the Physiological Institute Imeni Pavlov, Vol 1, 1945.

E U Chenykayeva

N A Itina (cf. "About the Reactivity of Muscles to the Drugs which Affect Sympathetic and Parasympathetic Nerves", Bulletin of Experimental Biology and Medicine, Vol. 29, 1941.)

G P Konrady

K M Bykov (cf. About the Chemical Nature of Nervous Excitement in the Central Nervous System", Physiological Journal USSR, Vol 21-Issue 5-6, 1936.) Bykov worked on the humoral transmission of nervous impulses, and to some extent with acetylcholine and cholinesterases problems. Bykov also worked at this time [c. 1941] at the Institute of Physiology at Leningrad University.

11. Institute of Physiology, Moscow

I S Shtern, Director of this Institute, worked on acetylcholine as one of the metabolites of the brain. With her was one (fnu) Kassal, and another collaborator was P A Sesvnin (cf. "About the Content of Acetylcholine-like Substances and Activity of Cholinesterases in the Brain Tissue of Different Animals, First Session of Moscow Society of Physiologists, Biochemists, and Pharmacologists, p 218, 1941.)

12. Beritov's Laboratory, Tbilisi, Georgia, USSR

I [S.] Beritov (Georgian name: Beritashvili) (cf. "About the Action of Acetylcholine on the Skeletal Muscles of the Frog, Physiological Journal SSR, Vol 27 - Issue 6, 1939, p 667.) There was a large group working under Beritov [c. 1941], with very good equipment; at times, this was also a very influential scientific group. In Beritov's laboratory was S P Narikashvili (cf. Two articles in Bulletin of Experimental Biology and Medicine, Vol 7, pp 139 and 286, 1939.)

13. Leningrad

B N Chernigovsky worked in acetylcholine (cf. "About the Nerve-Humoral Regulation", Advances in Modern Biology, Vol 9 - Issue 3, p 387.)

14. A A Zubkov (cf. "Acetylcholine and Central Inhibition", ibid, Vol 12 - Issue 2, 1940, p 350.)

P N Seribrjakov and H R Chapikova (cf. "About the Humoral Transmission of Nervous Impulses", First Session of Moscow Society of Physiologists, Biochemists, and Pharmacologists, p 216, 1941.)

A Ya. Pyabinovskaja (cf. Doklady SSR, Vol 23 - Issue 9, p 953, 1939.)

15. A number of laboratories in the USSR were involved with the pharmacological aspects of the action of acetylcholine, and the inhibitory action of different substances on cholinesterases. Some were located in Moscow and Leningrad.

16. In addition, there were at least two large groups involved in the study of cholinesterases and acetylcholine in Molotov, USSR. (fnu) Mereshinski was working here.

17. There was another group similar to that immediately above in Sverdlovsk, USSR.

18. Some scientific groups were involved in the study of synthetic phosphoric organic compounds. In 1940, a book was published on this matter, devoted entirely to the problem of esters having nothing to do with the subject of carbohydrate metabolism

SECRET/SECURITY INFORMATION

SECRET/SECURITY INFORMATION

- 7 -

This book indicates [] that the Soviets were at that time at a level of organic chemistry which would make it possible for them to supply compounds with cholinesterases inhibitory action. []

It may have been a Soviet translation of a foreign book. If very active work on inhibitors was indeed in process in the USSR in 1941, it would have been secret and a beginning.

19. []
20. [] the Soviet journals in which cholinesterases research is most likely to be found are:

Biokemia
Physiological Journal of the SSR
Archives of Biological Sciences
Bulletin of Experimental Biology and Pathology
Reviews of Modern Biology
Journal of Pharmacology ([] not [] exact title)
Journal of Pharmacology and Toxicology (?)

There were also classified (Secret) Soviet scientific journals with letter designations (A,B,C,etc). There was exchange secret literature between military institutes; [] Bella Hajkina at the Sanitary Institute in Kiev [par 5 above] mentioning [c.1941] receiving secret exchange scientific literature.

21. [] one very interesting article on the action of different pharmaceutical drugs upon the activity of cholinesterases, published by some laboratory in Moscow. [] it appeared in the Journal of Experimental Biology somewhere around 1937.
22. []
23. The institutions at which classified research on cholinesterases would most likely be conducted are [] the following []

Sanitary Institutes (e.g. Kiev, Moscow),
 Medical Military Academies (e.g. Leningrad, Saratov),
 Academy of Chemical Warfare (Moscow),
 Medical Naval Academies (e.g. Leningrad),
 Medical Air Force Academies (e.g. Moscow),
 also possibly selected universities.

24. []
- [] Index to Soviet scientists mentioned in this report, and paragraph numbers in which references appear:

Alpern, D E	par 6
Anosov, N N	" 6(c)
Artemov, I S ?	" 3(e)
Babshii, E B	" 3(g); par 4; par 24
Bekbulatov, (fnu)	" 3(e) and (i)
Berger, E N	" 6(c)
Beritov, I (s)	" 12

SECRET/SECURITY INFORMATION

SECRET/SECURITY INFORMATION

50X1-HUM

- 8 -

Bykov, K M	par 4(a); par 10
Chapikova, H R	" 14
Chernigovskaya, E U	" 10
Chernigovsky, B N	" 13
Chernenko (fnu)	" 9
Epelbaum, S E	" 5(b)
Yermakov, N V	" 3(j)
Fesenko, T F	" 6(c)
Ginetzinsky, A G	" 10
Hajkina, Bella	" 5(a) and (b); par 20
Hershenovich (fnu)	" 5(a)
Itina, N A	" 10
Kassel, (fnu)	" 11
Kirillova, A A	" 4(b)
Kisluk, B M	" 4(b)
Konrady, G P	" 10
Koshtoyants, Kh S	3; par 24
Kovyrev, I G	" 4(b)
Kukushkina, E A	" 3(g); par 4(b)
Markosjan, A A	" 4(b)
Mereshinski, (fnu)	" 16
Mikhelson, M Ya	" 24
Mikhelson, N I	" 10
Minzhev, P F	" 4(b)
Mitropolitanskaja,	
<u>R L</u>	" 3(e) and (h)
Narikashvili, S P	" 12
Nekrasova, M A	" 24
Palladin, A V	" 5(b)
Pyabinovskaja, A Ya	" 14
Raspopova, N A	" 4(b)
Rosenkov, (fnu)	" 4(a)
Seribrjakov, P N	" 14
Serikov, <u>F N ?</u>	" 8
Sesvin, P A	" 11
Shamarina, N M	" 10
Shtern, L S	" 11
Shumacher, (fnu)	" 3(g)
Volkova, I N	" 24
Vorenzov, (fnu)	" 8
Zubkov, A A	" 14]

50X1-HUM

SECRET/SECURITY INFORMATION